What is claimed is:

1. A video display apparatus, comprising:

a controllable source of a plurality of beams (R, G, B) for producing an image (800) on a display screen (700);

a photo sensor (S_1, ..., S_8) responsive to a light (M) produced by said image for generating a light sensing output signal (I_{sen});

a source (310) of a centering signal; and

a processor (900) responsive to said light sensing output signal for performing, when selected, an automatic image distortion correction operation to store a first plurality of correction values in a memory (EEPROM 920), said processor being further responsive to said centering signal and to correction values stored in said memory for producing a second plurality of correction values that are applied (DAC 311, 312) to said controllable source of said plurality of beams to provide an image centering change of said image, in accordance with said centering signal, such that, for any possible sequence of image centering operations, a worst case change to a difference between a center of one of a plurality of color bands forming an image on said display screen and a center of one of the other color bands is less than one half of a millimeter.

2. The display apparatus of claim 1, wherein said first plurality of correction values comprises data derived from initial sensor location data (Si1,...,Si8) and updated sensor location data (Sp1,...,Sp8).

3. The display apparatus of claim 1, wherein said second plurality of correction values comprises data derived from values associated with calculated edge center errors (DC), a current movement variable associated with a current center movement (CP) , and a history of prior moves from a center position (MS).

4. The display apparatus of claim 3, wherein said second plurality of correction values comprises integer information.

5. The display apparatus of claim 1, wherein said imaging centering change occurs in response to a user adjustment (820) of positional imaging information.

6. The display apparatus of claim 1, wherein said first plurality of correction values are derived from a matrix calculation (770) of sensor offset values indicative of differences between initial sensor position data (Si1,...,Si8) and updated sensor position data (Sp1,...,Sp8).

7. The display apparatus of claim 1, wherein said second plurality of correction values are derived from a 3 x 3 matrix calculation (860) based on said first correction values and an updated center positional value taking into account prior center position offsets.

8. The display apparatus of claim 1, wherein said first plurality and second plurality of correction values are integers, said first plurality and second plurality being derived, respectively, from a first set and second set of 3 x 3 matrix calculations of convergence data, and wherein said first set and second set of matrix calculations utilize the same values except for a center matrix value corresponding to a center offset associated with a center position of the display screen.

9. The display apparatus of claim 8, wherein said center value of said second set of matrix calculations includes integer data derived from a present movement (CP) from a center position and a sum of prior center position movements (SM).

10. A video display apparatus, comprising:

a controllable source of a plurality of beams (R, G, B) for producing an image (800) on a display screen (700);

a photo sensor (S_1, ..., S_8) responsive to a light (M) produced by said image for generating a light sensing output signal (I_{sen});

a source (310) of a centering signal; and

a processor (900) responsive to said light sensing output signal for performing, when selected, an automatic image distortion correction operation to store a first plurality of correction values in a memory (EEPROM 920), said processor being further responsive to said centering signal and to said stored first plurality of correction values for producing a second plurality of correction values that are applied (DAC 311, 312) to said controllable source of said plurality of beams to provide an image centering change of said image, in

accordance with said centering signal, such that said stored first plurality of correction values that are used each time for producing said second plurality of correction values are unmodified by any intervening image centering change.

11. The display apparatus of claim 10, wherein said first plurality of correction values are derived from a matrix calculation of sensor offset values indicative of differences between initial sensor position data (Si1,...,Si8) and updated sensor position data (Sp1,...,Sp8).

12. The display apparatus of claim 10, wherein said second plurality of correction values are derived from a 3 x 3 matrix calculation based on said first correction values and an updated center positional value taking into account prior center position offsets.

13. The display apparatus of claim 10, wherein said first plurality (780) and second plurality (885) of correction values are integers, said first plurality and second plurality being derived, respectively, from a first set and second set of 3 x 3 matrix calculations (770, 860) of convergence data, and wherein said first set and second set of matrix calculations utilize the same values except for a center matrix value corresponding to a center offset associated with a center position of the display screen.

14. The display apparatus of claim 13, wherein said center value of said second set of matrix calculations includes integer data derived from a present movement (CP) from a center position and a sum of prior center position movements (MS).

15. A method for center convergence correction in a projection display apparatus having a plurality of light sources (R,G,B) for producing an image (800) on a display screen (700), with which a number of photo sensors (S1,...,S8) are associated that can be illuminated by a marker, said method comprising:

determining a first set of correction values (785) associated with a first set of photo sensor initial positional data (Si1,...,Si8), an updated set of photo sensor positional data (Sp1,...,Sp8), and a center move variable for storage in memory (EEPROM 920);

in response to light source selection and illumination of photo sensor indicative of movement of a centering signal for providing an adjustment of said image position on said display,

determining a second set of correction values (885) based on said first set of correction values, a present movement (CP) from a center position associated with said centering signal, and taking into account a history of previous movements (MS) from a center position on said display screen; and

applying said correction values (890) to said centering signal to provide an image centering change of said image, wherein for all subsequent adjustments of said image center, said first set of correction values are unmodified by any intervening updating image centering change (820).

16. The method of claim 15, wherein said step of determining said second set of correction values comprises determining a matrix of values (860), said matrix having a center value derived from integer data associated with the present movement from the center position and the center move history.

17. The method of claim 16, wherein said step of determining said second set of correction values further comprises determining said matrix of values as a 3 x 3 matrix, wherein said center value is the aggregate of the average of the left and right sensor vertical position differences and the top and bottom sensor horizontal position differences, a summation of previous center move distances, and the present movement from the center position.

18. The method of claim 17, wherein at least one of said other matrix values associated with edge sensor data is non-zero.

19. The method of claim 17, wherein a multiplicity of image centering operations have a progressive effect on said image center position without affecting said edge image sensor locations on said display screen.

20. The method of claim 18, wherein the center move history (MS) is updated for use in subsequent convergence corrections (820) by summing the present center movement with the prior move history sum value and storing said sum in memory (870).

21. A computer readable medium having encoded thereon computer executable instructions for controlling a processor (900) of a video display apparatus having a plurality of light sources (R,G,B) for producing an image (800) on a display screen (700), with which a number of photo sensors (S1,...,S8) are associated that can be illuminated by a marker, wherein said executable instructions when implemented in said processor perform a method of:

determining a first set of correction values (785) associated with a first set of photo sensor initial positional data (Si1,...,Si8), an updated set of photo sensor positional data (Sp1,...,Sp8), and a center move variable for storage in memory (EEPROM 920);

in response to light source selection and illumination of photo sensor indicative of movement of a centering signal for providing an adjustment of said image position on said display,

determining a second set of correction values (885) based on said first set of correction values, a present movement (CP) from a center position associated with said centering signal, and taking into account a history of previous movements (MS) from a center position on said display screen; and

applying said correction values (890) to said centering signal to provide an image centering change of said image, wherein for all subsequent adjustments of said image, said first set of correction values are unmodified by any intervening updating image centering change (820).